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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,125	02/07/2001	Masumi Sakai	0800239.0129	7697
22434	7590	08/13/2004	EXAMINER LAVARIAS, ARNEL C	
BEYER WEAVER & THOMAS LLP P.O. BOX 778 BERKELEY, CA 94704-0778			ART UNIT 2872	PAPER NUMBER

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/779,125

Applicant(s)

SAKAI, MASUMI

Examiner

Arnel C. Lavarias

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12, 13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12, 13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendments to Claim 12 in the submission dated 6/7/04 are acknowledged and accepted.

### ***Response to Arguments***

2. The Applicant argues that, with respect to newly amended Claim 12, the combined teachings of Egan et al., Pettit et al., and Schmider et al., fail to teach or reasonably suggest a furnace-type atomic absorption spectrophotometer, the spectrophotometer including parameter setting means for setting parameters that determine response characteristics of the heating control means, the parameter setting means adjusting the parameters according to kinds of elements to be detected and thereby controlling indicial response characteristics of the heating control means in units of milliseconds when the tube is heated by the heating control means. After a review of the Egan et al., Pettit et al., and Schmider et al. references, the Examiner agrees, and respectfully withdraws the rejections of Claims 12-13, 15-16 in the Office Action dated 3/4/04.
3. Addressing Applicant's response to arguments regarding controlling indicial response characteristics of the heating control means in units of milliseconds, it is noted that the Applicant has misinterpreted Examiner's arguments. As previously stated, Egan et al. in view of Pettit et al. discloses controlling indicial response characteristics of the heating control means, and this is done with the heating

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control means operating and displaying units of seconds. Since, 1 second is equivalent to 1000 milliseconds, one skilled in the art would recognize that the heating control means may operate and display units of milliseconds, e.g. instead of operating and displaying 10 seconds, it would operate and display 10000 milliseconds.

4. Claims 12-13, 15-16 are now rejected as follows.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12-13, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egan et al. (U.S. Patent No. 4159876), of record, in view of Pettit et al. (U.S. Patent No. 4669040), of record, and Okumoto et al. (U.S. Patent No. 5104220).

Egan et al. discloses a furnace-type atomic absorption spectrophotometer comprising a tube for heating a sample (See 2 in Figure 1; col. 3, lines 27-59), monitoring means for monitoring temperature of the tube (See upper portion of Figure 1, minus the DC-AC Converter and workhead; circuitry around 21, including 12, R<sub>1</sub>, and 21 in Figure 5) and outputting a monitored value indicative of the monitored temperature (See 15 in Figure 5), heating control means (See lower portion of Figure 1, including the DC-AC Converter and workhead; Lower portion of Figure 5; Figure 6) for controlling heating current for heating the tube

such that the monitored value will approach a specified target temperature value, and parameter setting means (See for example 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 5, lines 5-17) for adjusting parameters according to conditions of measurement and thereby controlling indicial response characteristics, at a time of raising temperature (See for example 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 5, lines 5-17), of the heating control means in units of milliseconds (See for example col. 3, lines 40-59; by standard SI conversion, 1 second is equivalent to 1000 milliseconds) when the tube is heated by the heating control means (See col. 3, line 1-col. 6, line 7). Egan et al. additionally discloses the parameter setting means including an input device for allowing a user to input parameters (See 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 4, lines 5-40), and an input device for allow a user to input a condition corresponding to the parameters (See 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 4, lines 5-40). Egan et al. also discloses that the monitoring means monitors values indicative of the temperature of the tube (See 15 in Figure in Figure 5; col. 4, lines 52-68). Egan et al. lacks the heating control means *digitally* controlling heating current for heating the tube, or the parameter setting means setting parameters that determine response characteristics of the heating control means, the parameter setting means adjusting the parameters according to kinds of elements to be detected. However, Pettit et al. teaches a self-tuning digital PID controller for applications such as plastic extruders and continually operable furnaces and ovens (See col. 1, lines 20-44; col. 13, lines 46-62). In particular, the digital PID controller is able to determine the appropriate PID tuning parameters, which include that standard proportional, integral, and

differential parameters (See Abstract; col. 7, lines 12-25), and set the system to utilize these parameters (See col. 7, line 12-col. 8, line 61). Additionally, the self-tuning digital PID controller includes a microprocessor and non-volatile electrically alterable read-only memory (See col. 9, lines 33-55) to digitally process and store the calculated parameters for later use. The combined teachings of Egan et al. and Pettit et al. lack the parameter setting means setting parameters that determine response characteristics of the heating control means, the parameter setting means adjusting the parameters according to kinds of elements to be detected. However, Okumoto et al. teaches a flameless atomic absorption spectrophotometer apparatus and analyzing method (See for example Abstract). As taught by Okumoto et al., the ashing and atomization temperatures are unique for each specific element. Hence, different heating programs are stored and utilized by the spectrophotometer based on the element or combination of elements to be detected and analyzed (See Figure 1; col. 1, line 6-col. 2, line 4). The heating programs are stored and executed by a central control section (See 52 in Figure 1), with signal instructions being sent directly to the heating power supply (See 54 in Figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the self-tuning digital PID controller, as taught by Pettit et al. in the furnace-type atomic absorption spectrophotometer as disclosed by Egan et al. One would have been motivated to do this to provide automated control of the determination of characteristic furnace parameters, as well as provide automated and self-tuning functions as the furnace characteristics change over time. Furthermore, it would

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have been obvious to one having ordinary skill in the art at the time the invention was made to have the parameter setting means set parameters that determine response characteristics of the heating control means, the parameter setting means adjusting the parameters according to kinds of elements to be detected, as taught by Okumoto et al., in the spectrophotometer of Egan et al. in view of Pettit et al. One would have been motivated to do this to maximize atomization of the element to be analyzed and detected, thus increasing the sensitivity and signal-to-noise ratio of the measurement system.

### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5703342 to Hoffmann et al.

Hoffmann et al. is being cited to evidence conventional temperature controlling systems for use in, for example, atomic absorption spectrophotometers (See Abstract; Figure 1; col. 5, lines 13-62), wherein the temperature controller (See 4, 5, 6, 7, 8 in Figure 1) is operable to adjust the various temperature control parameters (for example, the input current to the graphite tube furnace, phase angle of the input current) to achieve a temperature response in a time scale of the order of milliseconds (See in particular Figures 3-5).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See

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MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

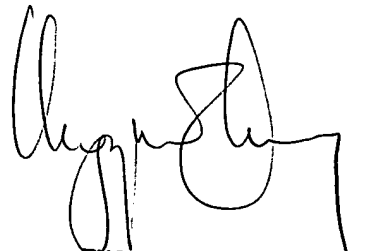


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias  
8/9/04



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